

Crater-making demo

This activity could be used as an add-on to Lesson 2, contributing to the pupils' understanding of what a crater is, how it forms, and what features it has. In this activity, pupils can create small craters in flour, using pebbles or marbles.

You will need:

1. A tray
2. Flour (could be replaced with another fine dust or sand)
3. Cocoa powder (could be replaced with another dark dust or sand)
4. Pebbles or marbles of a variety of sizes

Set up:

1. Pour flour in the tray until there is a ~3 cm depth layer of flour.
2. Sprinkle a thin layer of cocoa powder on top.
3. You may wish to place the tray on a surface that's easy to wipe clean (the activity can get messy!)

Running the activity:

1. Drop a pebble or marble in the tray to form a crater.
2. Discuss main features of the crater: crater floor, rims, walls, rays of ejecta. Not all of them may be visible in the small flour crater.



3. Compare the small crater to the 3D models of craters, or to photos of craters. Discuss differences.
- a. The main difference is size – all the craters that the 3D models are based on are several tens of kilometres wide, up to 200km, with two exceptions Barringer crater is just over 1km wide, while Mare Orientale is almost 1000km wide.
 - b. The 3D crater models are all complex crater, displaying extra features (see below). Small craters in flour won't have these features, because it's just not possible to get the required force of impact.
 - i. Some of the crater models have a **peak in the middle**. It's called a central peak and forms in really large impacts, when the ground rebounds after the compression ends.
 - ii. Mare Orientale is a **multiring impact basin**. This means it is very large, so the central peak gets so big that it collapses back down and forms several rings.
 - iii. Some craters, like Copernicus and Tycho, are surrounded by walls that slope down (they are not sharp and vertical like the usual). These are called **terraced walls**, and form when the walls become unstable and collapse under gravity.
4. Repeat the activity with different sizes of pebbles and/or dropping them from different heights, and note the differences.

